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10 CFR 50.73

August 24, 2012
NRC-12-0055

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Licensee Event Report (LER) No. 2012-003

Pursuant to 10 CFR 50.73(a)(2)(iv)(A), Detroit Edison is submitting the enclosed LER No. 2012-003, Reactor Scram Due to Degrading Condenser Vacuum.

No commitments are being made in this LER.

Should you have any questions or require additional information, please contact Mr. Rodney W. Johnson of my staff at (734) 586-5076.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Joseph H. Plona'.

Enclosure

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 4, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

NRC FORM 366 (10-2010)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB: No. 3150-0104 Expires 10/31/2013		Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.			
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)									
1. FACILITY NAME Fermi 2				2. DOCKET NUMBER 05000341		3. PAGE 1 OF 3			
4. TITLE Reactor Scram Due to Degrading Condenser Vacuum									
5. EVENT DATE			6. LER NUMBER			7. REPORT DATE		8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME
06	25	2012	2012	- 003	- 00	08	24	2012	FACILITY NAME
									DOCKET NUMBER 05000
									DOCKET NUMBER 05000
9. OPERATING MODE <div style="text-align: center; font-size: 2em;">1</div>		11. THIS REPORT SUBMITTED PURSUANT TO THE OF 10 CFR§: (Check all that apply)							
10. POWER LEVEL <div style="text-align: center; font-size: 1.5em;">26 Percent</div>		<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input checked="" type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> 50.73(a)(2)(vii)	
		<input type="checkbox"/> 20.2201(d)		<input type="checkbox"/> 20.2203(a)(3)(ii)		<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
		<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(4)		<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
		<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 50.36(c)(1)(i)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
		<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 50.36(c)(1)(ii)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
		<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.36(c)(2)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
		<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.46(a)(3)(ii)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
		<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(A)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> OTHER	
		<input type="checkbox"/> 20.2203(a)(2)(vi)		<input type="checkbox"/> 50.73(a)(2)(i)(B)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)			
		Specify in abstract below or in NRC Form 366A							
12. LICENSEE CONTACT FOR THIS LER									
FACILITY NAME Fermi 2 / Robert J. Salmon – Supervisor, Nuclear Compliance								TELEPHONE NUMBER (Include Area Code) (734) 586 - 4273	
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
E	SJ	TRB	D055	Y					
14. SUPPLEMENTAL REPORT EXPECTED <input checked="" type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO						15. EXPECTED SUBMISSION DATE			
						MONTH	DAY	YEAR	
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) On 6/25/2012 after completing repairs to the main unit transformer, reactor power was raised to approximately 22% and the unit was synchronized to the power grid at 1203 EDT. At 1234 EDT Operations began a power increase. At 1322 to 1325 EDT multiple vibration related alarms were received for the south reactor feed pump, and the pump tripped at 1325 EDT. Manual operation of the north reactor feed pump was used initially to recover reactor level. At 1330 hours a manual scram was performed by placing the reactor mode switch in shutdown in response to degrading condenser vacuum. All rods fully inserted and operators used the standby feedwater system to restore water level. Reactor water level reduced to below Level 3 as a result of the scram, and all isolations and actuations associated with that level occurred as expected. The south reactor feed pump turbine was damaged which resulted in main condenser vacuum leaks that were isolated following the event. Decay heat was removed using the main condenser via the turbine bypass valves.									

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NARRATIVE**Initial Plant Conditions:**

Mode 1
Reactor Power 26 percent

Description of the Event

On 6/24/2012 reactor power was reduced to about 20% and the Main Turbine Generator (MTG) [TA/TB] was taken off line to repair Main Unit Transformer 2B [EL]. On 6/25/2012, after completing repairs to the main unit transformer, reactor power was raised to approximately 22% and the unit was synchronized to the power grid [FK] at 1203 EDT. A power ascension began at 1234 EDT using a combination of recirculation flow and control rod pulls to increase reactor power. Feedwater Control [JB] was transferred from Startup Level Control to Single Element Automatic Control at 1300 EDT. Two separate south reactor feed pump vibration alarms (5D28) [IB] were received in the Main Control Room at 1306 and 1312 EDT. Investigation of these alarms revealed no abnormal indications or conditions. At 1322 to 1325 EDT multiple vibration related alarms were received for the south reactor feed pump [SJ], and the pump tripped at 1325 EDT. The north reactor feed pump was started in manual, and multiple Reactor Level High and Low alarms were received as operators worked to control level. A main condenser [SG] pressure increase was identified at 1329 EDT as condenser pressure rose from 0.6 psia to 2.2 psia. At 1330 hours a manual scram was performed by placing the reactor mode switch in shutdown in response to the degrading condenser vacuum.

All rods fully inserted [JC] and operators used the standby feedwater system to restore water level to the normal band. The lowest post scram water level was +154 inches which is below reactor water Level 3 and above Level 2. As expected, the High Pressure Coolant Injection [BJ] and Low Pressure Coolant Injection Systems [BO] did not actuate. No SRVs actuated, and all isolations [JE] and actuations associated with reactor water Level 3 occurred as expected.

Entry into the South Reactor Feed Pump Room after the scram revealed damage to the south reactor feed pump turbine which resulted in main condenser vacuum leaks. The vacuum leaks were isolated and condenser vacuum improved and stabilized at 4 psia following the event. Decay heat was removed using the main condenser via the turbine bypass valves. The south reactor feed pump/turbine is expected to be out of service for an extended time period.

Plant configuration changes were made to isolate the south reactor feed pump/turbine from plant systems and the reactor was restarted using the north reactor feed pump to feed the reactor. A steady 68% power level was achieved on 7/30/2012.

Significant Safety Consequences and Implications

This event posed no significant safety implications because the reactor protection and safety related systems functioned as designed following the manual reactor trip. Important safety-related and non-safety related equipment performed as discussed in the description of the event, and plant response was as expected. There was no increase in reactor pressure, and the reactor core was adequately covered and cooled throughout the event.

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Therefore, the health and safety of the public were not affected by this event.

This event is being reported under 10 CFR 50.73(a)(2)(iv)(A), as an event or condition that resulted in manual actuation of the reactor protection system and a reactor scram. A 4-hour non-emergency notification was made to the NRC Operations Center at 1638 EDT on June 25, 2012 (EN 48047) in accordance with 10 CFR 50.72(b)(2)(iv)(B) for an actuation of the reactor protection system.

Cause of the Event

The direct cause of the event was a degradation in condenser vacuum resulting in a manual scram. The degrading vacuum was caused by vacuum leaks that occurred as the south reactor feed pump was damaged during the event. The cause of the mechanical failure of the south reactor feed pump is still under investigation.

Corrective Actions

This event was entered into the Fermi 2 Corrective Actions Program. The associated root cause evaluation is still in progress and includes a tear down of the south reactor feed pump and failure analysis. Additional corrective actions may be identified as a result of this effort.

The condition of the north reactor feed pump was assessed and it was determined to be undamaged. Each feed pump was designed to perform at up to 70% feedwater flow. Modifications were performed isolating the south reactor feed pump from its steam and water supplies and from the main condenser, so that the plant could be restarted and run at a lower power level using the north reactor feed pump while the cause of the failure of the south reactor feed pump turbine is investigated and the turbine is rebuilt or replaced. Procedures were revised to reflect running the plant on the north reactor feed pump. Sustained operation at a reduced power level was evaluated and determined to be achievable. Additional monitoring of the north reactor feed pump was performed and additional data gathering equipment has been installed for the north reactor feed pump to assist Engineering in evaluating vibration if needed.

Additional Information**A. Failed Component:**

Component: Reactor Feedwater Turbine / Pump
Function: Supplies Reactor Feedwater
Manufacturer: Imo Delaval, Inc.
Model Number: Type KJDF Reactor Feed Pump
Failure Cause: Unknown

B. Previous Licensee Event Reports (LERs) on Similar Problems:

There are no other LERs on similar problems noted within the past five years